

In the Claims:

1-15. (Canceled).

16. (Currently Amended) A system for autostereoscopic vision comprising:

(a) a first optical construction which comprises a display, a calculation module and a birefringent layer, wherein:

(i) a display for displaying said calculation module is operable to calculate a uniformly polarized combined image of left and right image picture elements of left and right images, wherein such that light intensity of each picture element of said combined image is calculated as a first function of left-image light intensity at a corresponding position of a left image, and of right-image light intensity at a corresponding position of a right image;

(ii) said display is operable to display said combined image in uniformly polarized light;

(iii) said calculation module is further operable to calculate a first intermediate image wherein intensity of each picture element of said first intermediate image is calculated as a second function of left-image light intensity at a corresponding position of said left image and of right-image light intensity at a corresponding position of said right image;

(iv) said a birefringent layer is positioned in front of said display and comprises having an array of individually switchable elements each operable to rotate light passing therethrough to a selected degree, said birefringent layer being operable to re-divide being positioned in front of said

display and serving for re-dividing said uniformly polarized combined image by controlled partial light rotation of light emanating from each of picture elements of said combined images, —thereby constructing an second intermediate image wherein in said first regions intensity of a light component oriented in a first orientation A reproduces light intensity of a corresponding picture element of said left image and a light component oriented in a second orientation B orthogonal to A reproduces light intensity of a corresponding picture element of said right image, and wherein in said second regions a light component oriented in said second orientation B reproduces light intensity of a corresponding picture element of said left image and a light component oriented in said first orientation A reproduces light intensity of a corresponding picture element of said right image, and

image having simultaneously superimposed left and right image picture elements of left and right images, respectively, in which superimposed light of said left image is polarized differently from superimposed light of said right image, light of said left image displayed in adjacent picture elements is polarized differently and light of said right image displayed in adjacent picture elements is polarized differently;

- (b) a configurable second optical construction designed and constructed to be positioned between said first optical construction and a viewer and closer to said first optical construction than to said viewer, said second optical construction comprises first areas operable to block light components having said first orientation A and second areas operable to block light components having said second orientation B, said second optical construction being so positioned with respect to said first optical construction and said first and second areas being so sized and positioned with

respect to said first and second regions that for selected positions of left and right eyes of a viewer said reproduced light intensities of said left image picture elements are visible to said left eye of a viewer and blocked from view by said right eye of a viewer, and said reproduced light intensities of said right image picture elements is visible to said right eye of a viewer and blocked from view by said left eye of a viewer.

(e) an eye tracking sensor for providing information pertaining to positions of the left and the right eyes of the viewer; and

(d) a control element operable to receive said eye position information from said eye tracking sensor, to calculate appropriate configurations of said second optical construction based on said received eye position information, and to issue successive configuration commands to said second optical construction, thereby commanding configurations of said second optical construction, which configurations enable a left eye of the viewer to continuously see left imagery data presented by said first optical construction and a right eye of the viewer to continuously see right imagery data presented by said first optical construction, and substantially prevent said left eye from seeing right imagery data and substantially prevent said right eye from seeing left imagery data, while the viewer changes position with respect to said first and second optical constructions.

17-24. (Cancelled)

25. (Currently amended) A system for providing autostereoscopic viewing to a viewer, comprising:

(a) a pixilated display for displaying a uniformly polarized combined image of left and right image picture elements of left and right images;

- (b) a first birefringent layer having individually switchable elements being positioned in front of said display and serving for re-dividing said uniformly polarized combined image by controlled partial light rotation;
- (c) a second birefringent layer at least some portions of which are birefringent having individually switchable elements, positioned between said viewer and said first birefringent layer; and
- (d) a uniform polarizer positioned between said viewer and said second birefringent layer;
- (e) ~~an eye tracking module; and~~
- (f) ~~a controller operable to control switchable elements of said first birefringent layer and of said second birefringent layer, based on information received from said eye tracking module,~~
- the system being operable to provide autostereoscopic viewing to a moving viewer at a position, each of said viewer's right and left eyes seeing, simultaneously, an appropriate image, at full pixel resolution of said display.

26. (Original) The system of claim 25, wherein said controlled partial light rotation is effected by controlled degree of light rotation.

27. (Original) The system of claim 25, wherein said controlled partial light rotation is effected by controlled time periods of light rotation.

28. (Original) The system of claim 25, wherein said controlled partial light rotation is effected by both controlled degree of light rotation and controlled time periods of light rotation.

29. (Canceled)

30. (Original) The system of claim 25, further comprising a lens element for focusing light from said display onto said birefringent layer.

31. (Original) The system of claim 25, wherein said display includes a rear and remote light source producing homogenous light rays.

32. (Currently amended) A system for autostereoscopic vision comprising:

(a) a first optical construction which comprises:

(i) a display for displaying a uniformly polarized combined image of left and right image picture elements of left and right images, wherein light intensity of each picture element of said combined image is a function of left-image light intensity at a corresponding position of a left image, and of right-image light intensity at a corresponding position of a right image; and

(ii) a birefringent layer having individually switchable elements being positioned in front of said display and serving for re-dividing said uniformly polarized combined image by controlled partial light rotation; and

(iii) a computing and control module operable to control functionality of said display and of said switchable elements of said birefringent layer, and thereby to construct thereby constructing an image wherein in first regions each pixel displays light of which a first component having a first orientation reproduces light intensity of a left picture element of a left image and a second component having a second orientation reproduces a right picture element of a right image, and wherein in second regions each pixel displays light of which a first component having said second

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orientation reproduces light intensity of a left picture element of a left image and a second component having said first orientation reproduces a right picture element of a right image.

having simultaneously superimposed left and right image picture elements of left and right images, respectively, in which superimposed light of said left image is polarized differently from superimposed light of said right image, light of said left image displayed in adjacent picture elements is polarized differently and light of said right image displayed in adjacent picture elements is polarized differently.

33. (Previously Presented) The system of claim 32, further comprising:

(b) a second optical construction designed and constructed to be positioned between said first optical construction and a viewer and closer to said first optical construction than to said viewer, said second optical construction when so positioned enabling a left eye of the viewer to see left imagery data presented by said first optical construction and a right eye of the viewer to see right imagery data presented by said first optical construction, while substantially preventing each of the right and left eyes of the viewer from seeing light from an inappropriate image.

34-35. (Canceled)

36. (Original) The system of claim 33, wherein said display includes a rear and remote light source producing homogenous light rays.

37-55. (Canceled).

56. (Previously Presented) The system of claim 33, wherein said second optical construction is configurable to present a plurality of polarizing strips, each strip having a polarization orientation orthogonal to that of strips to which it is adjacent.

57. (Previously Presented) The system of claim 33, wherein said second optical construction comprises a birefringent layer with individually switchable elements.

58. (Previously Presented) The system of claim 33, wherein said second optical construction comprises a birefringent layer with individually switchable elements and a uniform polarizer.

59. (Currently amended) A system for stereoscopic or autostereoscopic viewing, designed and controllable to present a combined image of left and right image picture elements of left and right images The system of claim 37, comprising:

- (a) a display for displaying a uniformly polarized combined image of left and right image picture elements of left and right images; and
- (b) a birefringent layer having individually switchable elements being positioned in front of said display and serving for re-dividing said uniformly polarized combined image by controlled partial light rotation; and
- (c)- a computing module operable to compute said combined image of left and right image picture elements for display by said display, based on left and right picture elements of left and right images, and further operable to compute commands for driving said individually switchable elements of said birefringent layer, said

system being operable to construct and display ~~econstruct~~ an image wherein pixels
within first regions emit light having a component in a first orientation which
component reproduces light intensity of a left picture element of said left image and
further having a component in a second orientation orthogonal to said first orientation
which component reproduces light intensity of a right picture element of said right
image, and wherein pixels within second regions emit light having a component in
said first orientation which component reproduces light intensity of a right picture
element of said right image and a component in said second orientation which
component reproduces light intensity of a left picture element of said left image.
~~having superimposed left and right image picture elements of left and right images,~~
~~respectively, in which superimposed light of said left image is polarized differently~~
~~from superimposed light of said right image.~~

60. (Canceled)

61. (Currently amended) The system of claim 60 ~~59~~, further being operable
to construct and display an image wherein pixels within both said first regions and
said second regions emit light having a component in a third orientation which
component reproduces light intensity of a left picture element of said left image and
further having a component in a fourth orientation orthogonal to said third orientation
which component reproduces light intensity of a right picture element of said right
image.

~~to present an image wherein light of said left image is polarized uniformly and~~
~~light of said right image is polarized uniformly.~~

62. (Previously Presented) The system of claim 59, wherein said display is pixellated, and wherein said individually switchable elements of said birefringent layer are each optically aligned with a respective pixel of said display, and wherein each of said individually switchable elements is controlled to vary the polarization of output light from a display pixel with which it is optically aligned.

63. (Previously Presented) The system of claim 32, wherein said display is pixellated, and wherein said individually switchable elements of said birefringent layer are each optically aligned with a respective pixel of said display device, and wherein each of said individually switchable elements is controlled to vary the polarization of output light from a display pixel with which it is optically aligned.

64. (Previously Presented) The system of claim 16, wherein said control element is further operable to communicate with said first optical construction.

65. (Previously Presented) The system of claim 64, wherein said control element is operable to command size and position of picture elements presented by said first optical construction.

66. (Previously Presented) The system of claim 65, wherein said first optical construction comprises a first pixilated liquid crystal panel and a second pixilated liquid crystal panel.

67. (Previously Presented) The system of claim 66, wherein said first optical construction further comprises a light source, a first uniformly polarizing layer

positioned between said light source and said first liquid crystal panel, and a second uniformly polarizing layer positioned between said first liquid crystal panel and said second liquid crystal panel.

68. (Previously Presented) The system of claim 65, wherein said second optical construction comprises a uniform polarizer and a birefringent layer with individually switchable elements.

69. (Previously Presented) The system of claim 25, wherein each individually switchable element of said first birefringent layer is optically aligned with one and only one pixel of said pixilated display.

70. (New) The system of claim 16, further comprising
(c) an eye-tracking sensor for providing real-time information pertaining to positions of the left and the right eyes of the viewer; and
(d) a control element operable to receive said eye-position information from said eye-tracking sensor, to calculate appropriate sizes and positions for said first and second regions and for said first and second areas as a function of said eye-position information, and to issue successive configuration commands to said calculation module to position said first and second regions and first and second areas according to said calculated appropriate sizes and positions, thereby commanding positioning of said first and second regions on said first optical construction and commanding positioning of first and second areas on said second optical construction in a manner which enables a left eye of the viewer to continuously see left imagery data presented by said first optical construction and a right eye of the viewer to

continuously see right imagery data presented by said first optical construction, and which substantially prevents said left eye from seeing right imagery data and substantially prevent said right eye from seeing left imagery data, while the viewer changes position with respect to said first and second optical constructions.

71. (New) The system of claim 70, wherein said second optical construction comprises a liquid-crystal panel and a uniform polarizer.

72. (New) The system of claim 25, wherein said second birefringent layer comprises individually switchable elements, and further comprising

(e) an eye-tracking module; and

(f) a controller operable to control switchable elements of said first birefringent layer and of said second birefringent layer, based on information received from said eye-tracking module,

the system being operable to provide autostereoscopic viewing to a moving viewer, each of said viewer's right and left eyes seeing, simultaneously, an appropriate image, at full pixel resolution of said display.